

Title (en)

DIFFERENTIAL NEEDLING OF A CARBON FIBER PREFORM

Title (de)

DIFFERENZIELLE VERNADELUNG EINES VORFORMLINGS AUS KOHLENSTOFFFASERN

Title (fr)

AIGUILLETAGE DIFFÉRENTIELLE DE PREFORMES DE FIBRES DE CARBONE

Publication

EP 3211262 A3 20180214 (EN)

Application

EP 17153854 A 20170130

Priority

US 201615051259 A 20160223

Abstract (en)

[origin: EP3211262A2] A carbon-carbon composite preform including a plurality of layers including carbon fibers or carbon-precursor fibers, the layers include a first exterior layer defining a first major surface, a second exterior layer defining a second major surface, and at least one interior layer disposed between the first exterior layer and the second exterior layer, the at least one interior layer having a peripheral region that forms a portion of an outer surface of the preform. The preform includes needled fibers, where at least some needled fibers extend through two or more layers. The preform has an exterior region and a core region, where the exterior region includes at least the peripheral region of at least one interior layer. The needled fibers define a first needled fiber number density (NFND) in the exterior region and a second greater NFND in at least a portion of the core region.

IPC 8 full level

C04B 35/83 (2006.01); **D04H 1/4242** (2012.01); **D04H 1/46** (2012.01); **D04H 1/498** (2012.01); **D04H 3/002** (2012.01); **D04H 3/105** (2012.01); **F16D 65/12** (2006.01); **F16D 69/00** (2006.01); **F16D 69/02** (2006.01)

CPC (source: CN EP US)

B32B 3/266 (2013.01 - EP US); **B32B 5/06** (2013.01 - EP US); **B32B 5/26** (2013.01 - CN EP US); **B32B 7/08** (2013.01 - CN); **B32B 9/007** (2013.01 - EP US); **B32B 18/00** (2013.01 - EP US); **C04B 35/52** (2013.01 - US); **C04B 35/83** (2013.01 - EP US); **D04H 1/4242** (2013.01 - CN EP US); **D04H 1/46** (2013.01 - CN EP US); **D04H 1/498** (2013.01 - EP US); **D04H 3/002** (2013.01 - EP US); **D04H 3/105** (2013.01 - EP US); **D04H 18/02** (2013.01 - CN); **F16D 65/126** (2013.01 - EP US); **F16D 69/023** (2013.01 - EP US); **B32B 2255/02** (2013.01 - EP US); **B32B 2262/106** (2013.01 - EP US); **B32B 2307/542** (2013.01 - EP US); **B32B 2307/718** (2013.01 - EP US); **B32B 2475/00** (2013.01 - US); **B32B 2605/00** (2013.01 - EP US); **C04B 2235/614** (2013.01 - EP US); **C04B 2235/616** (2013.01 - EP US); **C04B 2235/6567** (2013.01 - EP US); **C04B 2235/77** (2013.01 - EP US); **C04B 2237/385** (2013.01 - EP US); **C04B 2237/586** (2013.01 - EP US); **F16D 2069/005** (2013.01 - EP US); **F16D 2200/0052** (2013.01 - EP US); **F16D 2200/006** (2013.01 - EP US); **F16D 2250/00** (2013.01 - EP US)

Citation (search report)

- [XAI] EP 0683261 A2 19951122 - GOODRICH CO B F [US]
- [XAI] WO 02081942 A1 20021017 - HONEYWELL INT INC [US]
- [X] US 5664305 A 19970909 - LAWTON PETER GEOFFREY [GB], et al

Cited by

EP4104997A1; EP4104996A1; US10746246B2

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3211262 A2 20170830; **EP 3211262 A3 20180214**; **EP 3211262 B1 20210127**; CN 107119390 A 20170901; CN 107119390 B 20211015; US 10457016 B2 20191029; US 2017239911 A1 20170824

DOCDB simple family (application)

EP 17153854 A 20170130; CN 201611036867 A 20161123; US 201615051259 A 20160223